CLAIMS:

1. A display device comprising a field emission structure having
- first (201) and second (202) planar, parallel substrates which are spaced apart so as to form a gap therebetween,
- an anode (A), which is arranged at the first substrate,
- a number of cathodes (205), which are disposed in a plane on the second substrate (202), on the side facing the first substrate (201),
- a number of gate electrodes (203) for controlling electron emission from the cathodes (205), which gate electrodes (203) are disposed in a plane on the second substrate, under the cathodes (205), and are separated from the cathodes by an electrically insulating layer (204),

characterized by an electron beam guidance element (207) being provided in the gap between the first (201) and second (202) substrates.

2. A display device according to claim 1, wherein the cathodes are parallel cathode strips and the gate electrodes are parallel gate strips, which extend in a direction perpendicular to the cathode strips, such that emitter elements are formed at intersections between cathode strips and gate strips, which emitter elements are addressable by activating the corresponding cathode and gate strips.

3. A display device according to claim 2, wherein each such emitter element has a corresponding picture element in a display screen, which is associated with the anode, and a corresponding electron guiding funnel in the electron beam guidance element.

4. A display device according to any of the preceding claims, wherein the electron beam guidance element is a plate extending in a plane which is parallel to the first planar substrate.

5. A display device according to claim 2, wherein a cathode strip comprises a surface broadening in the area of an emitter element.

6. A display device according to claim 5, wherein the cathode strip comprises cut-outs in the surface broadening.

7. A display device according to claim 5, wherein the cathode strip in the area of the emitter element has the shape of a ring.

8. A display device according to claim 7, wherein the cathode strip in the area of the emitter element has the shape of at least two concentric rings.

9. A display device according to claim 5, wherein the cathode strip in the area of the emitter element is meander-shaped.

10. A display device according to any of the preceding claims, wherein the cathodes comprise carbon nanotubes.

11. A display device according to claim 2, wherein a gate strip comprises a cut-out in the area of an emitter element.

12. A display device according to claim 11, wherein the cut-out of the gate electrode substantially corresponds to the extension of a corresponding cathode surface in the area of the emitter element, so as to obtain minimal overlap therebetween.

13. A display device according to any of the preceding claims, wherein the insulating layer is a solid layer.

14. A display device according to any of claims 1-12, wherein the insulating layer has two sub-layers with different permittivities (ϵ_r), the sub-layer with the highest permittivity being closest to the gate electrodes.

15. A display device according to any of the preceding claims, further comprising auxiliary gate electrodes, disposed substantially in the same plane as the cathodes.